

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

Claims 10-29 are pending. In the present amendment, Claims 10, 12, 14, 15, and 20-26 are currently amended and new Claims 27-29 are added. Support for the present amendment can be found in the original specification, for example, at page 19, lines 14-27, at page 20, lines 9-11, at page 24, lines 24-26, at page 27, lines 8-16, at page 27, line 24 to page 28, line 16, at page 28, line 3 to page 29, line 7, and in Figures 1A-6. Accordingly, it is respectfully submitted that no new matter is added.

In the outstanding Office Action, the specification was objected to; Claims 10 and 20 were rejected under 35 U.S.C. § 101; Claims 10, 20, 21, and 23-26 were objected to; Claims 10-17 and 19-26 were rejected under 35 U.S.C. § 102(b) as anticipated by the non-patent reference titled *Software Fault Tolerance: A Tutorial* by Torres-Pomales (hereinafter “Torres-Pomales”); and Claim 18 was rejected under 35 U.S.C. § 103(a) as unpatentable over Torres-Pomales in view of U.S. Patent No. 7,076,350 to Álvarez -Troncoso et al. (hereinafter “Álvarez -Troncoso”).

In response to the objection to the specification, a new Abstract is hereby submitted to be added on page 34, which is the first page following the claim listing in the original specification. Support for the new Abstract can be found, for example, in original Claims 1, 8, and 9. Additionally, the Title is hereby amended as suggested in section 3 on page 3 of the Office Action. It is respectfully submitted that no new matter is added. Accordingly, it is respectfully requested that the objection to the specification be withdrawn.

In response to the rejection under 35 U.S.C. § 101, it is noted that the method recited in Claim 10 is hereby amended to tie the method to a design tool computer.<sup>1</sup> Thus, the method recited in Claim 10 is hereby tied to a particular apparatus and thus is believed to be directed to statutory subject matter. Further, Claim 20 is hereby amended to recite a computer readable storage medium as suggested in section 5 on page 4 of the Office Action. It is respectfully submitted that no new matter is added. Accordingly, it is respectfully submitted that all pending claims are directed to statutory subject matter and thus the rejection under 35 U.S.C. § 101 should be withdrawn.

In response to the claim objection in section 6 on page 4 of the Office Action, it is noted that Claims 10, 20, and 23 are hereby amended to no longer recite “where possible.” Instead, the claims are amended to clarify that the undesirable events are associated with any involved actuator. As described in the original specification, for example, at page 24, lines 24-26, the involved actuators are the actuators of which failure will raise the undesirable event. Additionally, the claim objections in sections 7-9 on page 4 of the Office Action are also addressed by the present amendment such that the dependent claims have a preamble consistent with the respective independent claims from which they depend. Accordingly, it is respectfully requested that the claim objections be withdrawn.

Turning now to the rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a), Applicant respectfully requests reconsideration of these rejections and traverses these rejections, as discussed below.

Independent Claim 10 recites a method comprising “producing replicates in the functional specification together with attached indicators of freeness of the replicates from other of the replicates, the indicators reflecting the refined fault tolerance requirements” and, after the mapping is done via the design tool computer, “verifying automatically that the

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<sup>1</sup> See the original specification, for example, at page 27, lines 31-33.

indicators of freeness are preserved during the mapping.” It is noted that Claim 10 is hereby amended to replace independence with freeness to be more consistent with the terminology used in the specification. For example, at page 19, lines 14-27, the specification explains that freeness means that the replicates are designed such that no one fault can impact two of the replicates. Thus, the required safety level can be insured.

It is respectfully submitted that the cited references do not disclose or suggest every feature recited in independent Claim 10.

Torres-Pomales is a tutorial on software fault tolerance which describes that, in software development, safety can be a concern and that redundancy can be applied to a single version of a piece of software to detect and recover from faults.<sup>2</sup> Additionally, Torres-Pomales describes that multi-version fault tolerance uses two or more variants of a piece of software, executed either in sequence or in parallel, based on the rationale that components built differently should fail differently.<sup>3</sup>

However, it is respectfully submitted that Torres-Pomales does not disclose or suggest “verifying automatically that the indicators of freeness are preserved during the mapping,” as recited in amended Claim 10.

Instead, as discussed above, the software development described in Torres-Pomales is based on the assumption that components built differently should fail differently. Thus, Torres-Pomales does not disclose or suggest that, after the hardware structure is built and mapped, verifying that different software components have freeness that is preserved during mapping. On the contrary, because the software components are built differently, there is no need according to Torres-Pomales to re-verify this after the mapping takes place. Instead, this is ensured before any mapping of the hardware takes place, and Torres-Pomales does not

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<sup>2</sup> See Torres-Pomales, at page 7, paragraph [0002] and at page 9, paragraph [0002].

<sup>3</sup> See Torres-Pomales, at page 17, paragraph [0003].

disclose or suggest that the freeness needs to be re-verified. Further, Torres-Pomales describes using two or more variants of *software* and thus does not describe replicates for which mapping the hardware structure would affect the freeness of the software. Thus, the verifying described in Torres-Pomales is not the claimed verifying.

Accordingly, it is respectfully submitted that Torres-Pomales does not disclose or suggest every feature recited in amended Claim 10. Thus, it is respectfully requested that the rejection of Claim 10, and all claims dependent thereon, as anticipated by Torres-Pomales be withdrawn.

Independent Claims 20 and 23, while directed to alternative embodiments, each recite features similar to those discussed above with respect to Claim 1. Accordingly, it is respectfully submitted that independent Claims 20 and 23 also patentably define over Torres-Pomales. Therefore, it is respectfully requested that the rejection of Claims 20 and 23, and all claims dependent thereon, as anticipated by Torres-Pomales be withdrawn.

Regarding the rejection of Claim 18, it is noted that Claim 18 is dependent on Claim 10 and thus is believed to be patentable for at least the reasons discussed above with respect to Claim 10. Further, it is respectfully submitted that Álvarez-Troncoso does not cure the above-noted deficiencies of Torres-Pomales. Thus, it is respectfully requested that the rejection of Claim 18 as unpatentable over Torres-Pomales in view of Álvarez-Troncoso be withdrawn.

New Claims 27-29 are added by the present amendment. Support for new Claims 27-29 can be found in the original specification, for example, at page 28, line 23 to page 29, line 27. Thus, it is respectfully submitted that no new matter is added.

It is noted that new Claims 27-29 depend on independent Claims 10, 20 and 23, respectively, and thus are believed to be patentable for at least the reasons discussed above with respect to Claims 10, 20, and 23.

Additionally, it is noted that Claim 27 recites that “the verifying automatically that the indicators of freeness are preserved during the mapping includes verifying that a first wire which carries a first data flow and a second wire which carries a second data flow, the first data flow and the second data flow being free, are not connected to a same connector.”

In view of the above discussion of Torres-Pomales, which describes fault tolerance with respect to software, it is respectfully submitted that Torres-Pomales does not disclose or suggest that verifying includes verifying that a first wire and a second wire which are free are not connected to a same connector. Thus, it is respectfully submitted that Claim 27, and Claims 28 and 29 which recite similar features to Claim 27, patentably define over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. A Notice of Allowance is earnestly solicited.

Respectfully submitted,

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